PROTECTOR FOR VEHICLE LICENSE PLATES

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Reference Cited:

U.S. Patent Documents

4001822	January 4, 1977	Sterzer	342/44
4813167	March 21, 1989	Means	40/210
4924611	May 15, 1990	Shaw	40/210
5150960	September 29, 1992	Redick	362/497
5428911	July 4, 1995	Figone et al.	40/209
5845584	December 8, 1998	Bullock et al.	105/458
6254302	July 3, 2001	Kraus	403/326
6264393	July 24, 2001	Kraus	403/282
6286238	September 11, 2001	Harrington	40/202
6481126	November 19, 2002	Paulhill	40/202
6526680	March 4, 2003	Yu	40/204
6556337	April 29, 2003	Wright	359/245
6582314	June 24, 2003	Arehart	472/51

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BACKGROUND OF THE INVENTION

This present invention relates to a practical method for a vehicle license plate protection by a protector at very low cost. The protector is pushed or screwed through the hole on a vehicle license plate and into a holder. The holder may be the existing hole or screw holder for a license plate on a vehicle body. The protector and the holder are connected to each other for holding and protecting the vehicle license plate, which can not be removed with a tool such as screw driver from outside of the vehicle body.

Currently a vehicle license plate is mounted to the license plate location on a vehicle body by two or four screws currently for cars, trucks, motorcycles and other vehicles. There are four holes, which are about 5/16 inch in diameter, on a normal vehicle license plate. The license plate screws, which are about 1/4 inch in diameter, are pushed through the holes on the vehicle license plate and screwed into the existing holes or screw holders on a vehicle body. The plate usually locates in central areas on the backside of a vehicle body. The screws are also very easy to be removed with a normal screw driver or coin from the outside of the vehicle body.

Several US patents relating vehicle license plates have been issued over years. U.S. Patent No. 6,582,314 discloses a novelty device to attach to the vehicle between a license plate mounting area and the license plate. U.S. Patent No. 6,481,126 discloses a lockable license plate holder for securing a license plate via a plurality of the conventional fasteners and a locking unit including a lock member. U.S. Patent No. 6,286,238 discloses security system for a license plate, vanity plate or tag includes a bracket for mounting on a vehicle and a lockable frame interfitting therewith. Locking is achieved between the frame and bracket. U.S. Patent No. 6,254,302 discloses a holding element and plate member including elastic holding element mounting region. In one form, the elastic region includes a holding zone. In another form, the elastic region is formed by a pair of elongate resilient arms that disposed on opposite sides of the elastic region. U.S. Patent No. 5,845,584 discloses a bridge plate assembly for use in

moving vehicles between rail cars for loading and unloading has sufficient length to span the space between adjacent rail cars and has sufficient width to accommodate vehicles of varying wheelbase. U.S. Patent No. 5,428,911 discloses a mountable display apparatus for surrounding the edges of a vehicle identification plate mounted within the plate well of a vehicle. The frame is flexible and larger than the plate well. U.S. Patent No. 5,150,960 discloses a vehicle illumination device for a license plate that includes a frame enclosing a clear plastic wedge which serves as a light pipe for a light source placed along one edge of the clear plastic wedge. U.S. Patent No. 4,4924,611 discloses a frame comprising upper, lower, and side bars outlines a space to display a license plate. U.S. Patent No. 4,813,167 discloses an apparatus for removable fastening a cover plate covers a vehicle's existing license plate. When a cover plate for a license plate is so mounted, it is placed in a relation with respect to the license plate. U.S. Patent No. 4,001,822 discloses an electronic licensed plate including a single antenna system.

Vehicle license plates are very easy to be removed from vehicles after removing the plate screws with a normal tool such as a screw driver or coin. The license plates are easily stolen, which happens in public parking lots and at nighttime. It is inconvenient to the vehicle owners and drivers after it happens. There is a need to have a protection for vehicle license plates. Also the cost should be low enough for people to use the protection for vehicle license plates.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an elevational view of the protector for vehicle licenses.

Fig. 2 is a side view of the protector of Fig. 1.

Fig. 3 is an elevational view of the protector with the pressed function for vehicle licenses.

Fig. 4 is a side view of the protector of Fig. 3.

Fig. 5 is a bottom view of the protector of Fig. 3.

DESCRIPTION OF THE INVENTION

The present invention provides a practical and economical protection to protect vehicle license plates. The plates can not be removed by the normal methods such as by a screw driver or coin from outside of the vehicle body. When a vehicle license plate is needed to be changed, the connection between the protector and its holder needs to be released. Then the protector is screwed or pulled out. The protector may be used again for new vehicle license plate.

The principle of the protection is to hold the protector with its holder and to release the protector from the holder. When the protector is screwed or pushed into the holder on a vehicle body through the hole on a vehicle license plate, either part of the protector or holder is pressed or expanded. After the protector is placed in the holder, then the pressed or expanded parts return. The returned position causes the protector to be held by the holder. The protector can not be removed by screwing or pulling from the outside of the vehicle body, which protects the vehicle license plate from the being stolen. When the connection between the protector and its holder is released from the inside chamber of the vehicle body, then the protector is pulled or screwed out from the outside of the vehicle body. The protector may be used again.

There are two ways to make either part of the protector or holder to be pressed or expanded. The existing regular plate screw, which looks the same shape as a normal screw, has two parts. The top part of the plate screw has a larger diameter than the hole diameter of the existing vehicle license plate. The rest of the part is the screw with about 1/4 inch diameter. One method is to make the vehicle license protector to have some difference compared with the existing regular plate screw. The protector in this method has three parts, which are show in Figs. 1 and 2. The top part 1, which is short, is almost the same as the regular plate screw. The middle part 2 has a smaller diameter or size compared with the internal diameter of the holder and longer length than the length of the holder. The bottom part 3 has a larger diameter compared with the internal diameter of the holder. The diameter of the bottom part 3 reduces to the bottom end gradually. The protector is made from metal, plastic or other materials. The existing screw holders for vehicle license plates in most cars are made from plastic with the function to be expanded because there are cross cuts from the bottom part of the holder. When the protector is

pushed or screwed through the hole of a vehicle license plate and into the holder on a vehicle body, the holder expands. After the middle part 2 of the protector is in the holder, the expanded holder returns to the original position because the middle part 2 of the protector has a smaller diameter compared with the internal diameter of the holder. This stage provides the protection for the license plate, in which the protector can not pulled or screwed out from the outside of the vehicle body. Then the top part 1 is screwed into the holder to hold the plates firmly. The second method is to make some cuts such as cross cuts or the cuts at 120 degrees from the bottom part 6 of the protector , which are show in Figs. 3, 4 and 5. The bottom part 6 is pressed during screwing or pushed into a holder on a vehicle body. After the bottom part 6 of the protector passes the holder, which is the existing screw holder or hole (for most trucks), the pressed bottom part 6 returns to the original position and the protector holds with the holder because the middle part 5 of the protector has a smaller diameter compared with the internal diameter of the holder. This stage provides the protection for the license plate, in which the protector can not pulled or screwed out from the outside of the vehicle body. Then the top part 4 is screwed into the holder to hold the plates firmly. The two methods may also be used for other plates.

The cost for the plate protector is low. The existing screw holder or hole on a vehicle body is used for the protector. The method in this invention provides a practical and economical protection for automobile industry and vehicle customers to protect the license plates.

DETAIL DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following examples set forth preferred methods in accordance with the invention. It is to be understood, however, that these examples are provided by way of illustration and nothing therein should be taken as a limitation upon the overall scope of the invention.

EXAMPLE 1

A vehicle license plate protector comprised three parts, which was similar to the protector shown in Figs. 3, 4 and 5. The top part was a screw. The length was 3/8 inch. The bottom part

with screws had the cross cuts, which could be pressed. The middle part had a diameter 3/16 inch, which was smaller than the internal diameter of an existing holder on a car body located in the rear central location. The protector was pushed and screwed through the hole of a license plate and into the existing holder on the car body. The bottom part 6 of the protector was pressed to a smaller diameter during screwing into the holder. After the middle part 5 of the protector was in the holder, the pressed part returned. Then the protector could not be removed from the outside of the car body. The top part 4 was further screwed into the holder. Two protectors were screwed into the holders to hold the car license plate firmly.

EXAMPLE 2

A plate protector comprised three parts, which was similar to the protector shown in Figs. 1 and 2. The top part was a screw. The length was 3/8 inch. The bottom part with screws had a diameter 1/4 inch and reduced to 1/8 inch. The middle part had a diameter 5/32 inch. A screw holder, which located on a car body in the rear central location, had an internal diameter 5/32 inch and the cross cuts. The protector was pushed and screwed through the hole on a car license plate and into a holder on the car body. The bottom part of the protector was screwed into the holder. The holder expanded during screwing the bottom part of the protector into the holder. After the middle part of the protector was into the holder, the bottom part of the protector passed the holder and the expanded part of the holder returned to the original position. Then the protector could not be removed from the outside of the car body. Then the top part of the protector was screwed into the holder to hold the car license plate firmly.